

MAF EEC Tuning Guide

This guide aims to provide a basic method for tuning Mass Air Flow (MAF) based EECs, i.e. those from the V8 Falcon (I6's use Speed Density based tuning and are covered in another guide available at <http://www.tiperformance.com.au/library/diy-guides/>).

In order to be able to tune your car, you will need some tools:

- A J3 Chip & Programmer (see <http://www.tiperformance.com.au/products/>)
- A Data Logging device; you will need to log RPM, MAP, and O2 as a minimum. T.I. Performance sell the TechEdge 2J1 / LD02 combo kit at a discounted price. See <http://www.tiperformance.com.au/products/> for more information.
- A binary and definition for your ECU from the site
- Tom Cloud's EEC Tech Notes from the Reference section at <http://www.tiperformance.com.au/library/>
- Injector settings for your injectors (High and Low Slope)

Configure your Data Log

You will need to have configured each your logger in order to capture meaningful data. Below is a screenshot of the T.I. Performance Winlog Dash.



From the left, we have:

- **AFR – Air Fuel Ratio.** This tells us how healthy the fuel side of the tune is.
- **Manifold Pressure.** This is used to measure boost (where appropriate) and vacuum.
- **Throttle Position.** This tells us how wide open the throttle is.
- **RPM.** This tells us what RPM cell we are referencing.
- **Speed.** This tells us vehicle speed.

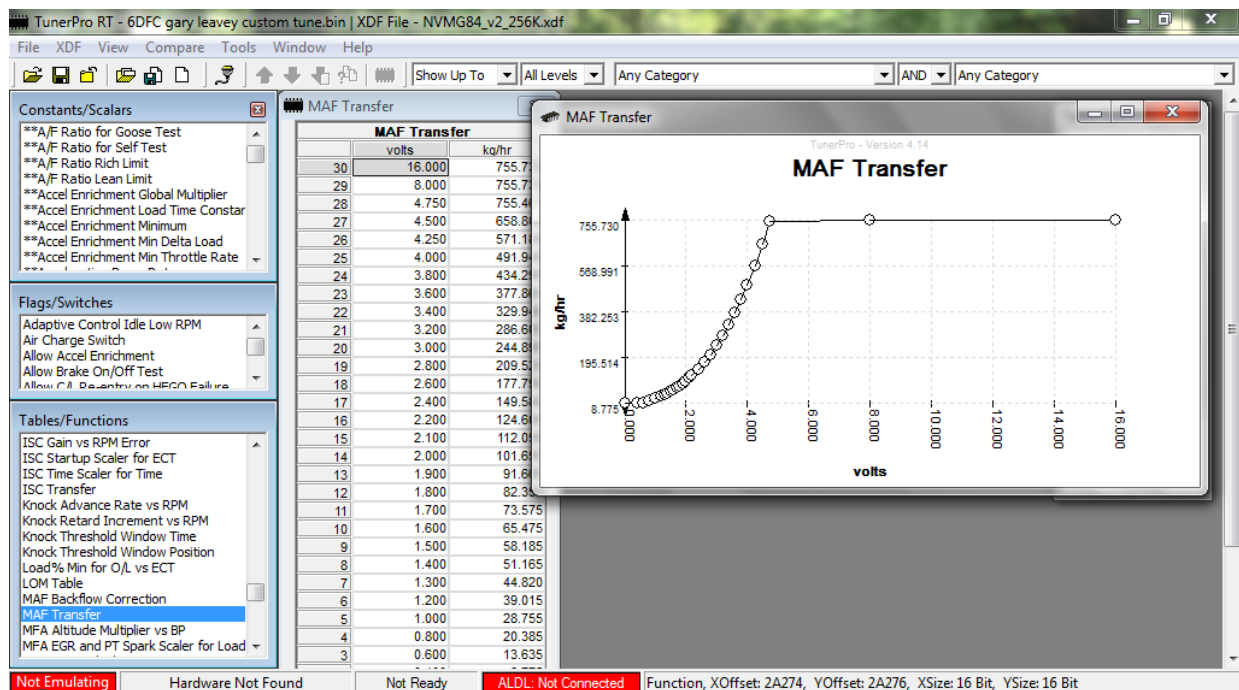
Analysing your log

Using the WinLog tool, you can view your resultant log in a number of ways. Visualising WOT or part throttle runs on the timeline is a good way start off, as you can highlight segments of your log where things aren't as they should be. You will

want to log sections of general part throttle driving, cruising at a constant speed, and of course, WOT runs.

Altering your AFRs

The MAF Transfer is the main table to tune when fine tuning fuel in the V8s. You should get the injector sizes right to get things close (if it's had an injector swap), then move onto the MAF Transfer as a way of fine tuning things. You will need to use a voltmeter or data logger to log the MAF voltage as you put the engine under different loads, and tweak this point of the transfer accordingly.



Once you have finished tweaking the table, follow the programming guide to send your file to the J3 chip!

Tuning Spark

The following tables are used to tune spark on the V8s:

Table	Comment
WOT Spark adder for RPM	Spark used at WOT conditions only
Spark Base, Sea Level, Altitude	Spark used for other throttle conditions, depending on altitude.

With spark focus on the Spark Altitude, Base and Sea Level tables. Putting the same table in all 3 will make tuning easier. Start with one of the base maps and add a few degrees of advance around the part throttle areas, being careful to listen for pinging.

WOT spark uses a different table in the V8s, the WOT Spark Advance vs RPM table. This is a simple one column map of spark to RPMs at WOT. You can generally aim for 30-odd degrees of WOT advance on a Windsor.

Tuning for common mods

Cam changes are common in V8 engines looking for a little extra grunt. These generally cause some idle and part throttle issues. Also common is putting the original MAF sensor in a larger MAF body – which inevitably causes a lean part throttle condition.

- Start by making sure you have the right settings for the injectors you have. Look online for the High and Low Slopes & Injector breakpoint.
- The biggest changes will need to be around idle ranges. Look at the MAF Transfer below 2V. **This will help stop hunting.**
- Idle Speed - I find 750 works well; anything higher can mess with the Dashpot and harm drivability. **This will help stop hunting.**
- Tweak the MAF Transfer in the midrange (use your logger to find out what this is) to perfect your cruise AFRs and prevent bucking.
- Use the sample 'Modified' tunes from the site as a guide
- Rev and Speed Limiters can be raised under the scaler section – AT YOUR OWN RISK!

Good Luck

Remember, tuning is no precise science and it will take a lot of time to perfect your tune. Small, documented changes are the way to go to help you incrementally build a perfect tune. Without documentation you will find it very hard to keep track of your work.

If you find this guide useful or have any suggestions please contact us.

Happy Tuning!